ABSTRACT OF THE DISCLOSURE

A method and system for increasing the effective communications channel bandwidth beyond that of the constrained physical bandwidth of a given channel by orthogonal signal spectrum overlay (OSSO) comprising: decomposing the time-bandwidth product (TBP) of a given symbol in a data stream transmitted through a given bandwidth, expanding the TBP in terms of overlaid orthogonal signals such as Weber-Hermite (WH) functions that constitute the eigensignals of the symbol. The complete data stream is multiplexed to produce a plurality of data channels, each of which is encoded on an orthogonal signal by quadrature amplitude modulation. The overlay of these signals constitutes the OSSO symbol. The OSSO symbols are transmitted in quadrature format (I and Q) and are the result of the addition of orthogonal signals, each of which constitutes a separate overlaid communication channel, occupying the same physical bandwidth.

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